

Ph.D. in PiBS / Genetics and Genomics (Post Bachelor's)

Year One, Fall Semester

1. Principles of Genetics and Genomics, GE 701	4
2. Foundations in Biomedical Sciences I: Protein Structure, Catalysis and Interactions, FC 711	3
3. Foundations in Biomedical Sciences II: Structure and Function of the Genome, FC 712	3
4. Professional Presentation Skills, FC 764	2

*Year One, Spring Semester**

1. Foundations in Biomedical Sciences III: Architecture and Dynamics of the Cell, FC 713	3
2. Foundations in Biomedical Sciences IV: Mechanisms of Cell Communication, FC 714	3
3. Foundations in Biomedical Sciences Vg: Translational Genetics and Genomics, FC 715 -or- Stem Cells and Regenerative Medicine, MM 710	2-3
4. Professional Development Skills, FC 708	2
5. Ethics and the Responsible Conduct of Research, ENG EK 800	1
6. Additional Foundations in Biomedical Sciences Elective(s)	2-3

*Please note that FiBS courses start earlier than the undergraduate spring semester! For specific dates for all of the modules, please refer to:

<http://www.bumc.bu.edu/gms/gateway/students/phd-mdphd/phd-current-course-offerings/foundations-in-biomedical-sciences/>

Year Two, Fall Semester

1. Genetics and Genomics Colloquium I, GE 703	2
2. Statistical Reasoning for the Basic Biomedical Sciences, FC 721	3
3. Additional Elective(s)	2-4

Year Two, Spring Semester

1. Principles of Genetics and Genomics, GE 701 (If not completed during year 1)	4
2. Legal and Ethical Issues of Science and Technology, ENG BF 752 -or- Social, Cultural, and Ethical Issues in Genetics, GC 716 ¹ -or- Deconstructing Systemic Bias: Where Biology Ends and Bias Begins, GE 706	2 3 2
3. Genetics and Genomics Colloquium, II GE 704	2
4. Ethics and the Responsible Conduct of Research, ENG EK 800 (If not completed during year 1)	1
5. Additional Elective(s)	2-4

¹ Only offered during spring semesters of even number years. Can be taken during year 1 or 3, if that works better.

Elective Courses²

Year Two, 4 Elective credits total from the following lists (some or all of these credits may be fulfilled in year 1):

Fall:	
Applications in Bioinformatics, ENG BF 527	4
Biological Core Technologies, GMS MM 730	2
Biostatistics with Computing, GMS CI 670	4
Cancer Biology and Genetics, GMS MM 703	2
Cellular Aspects of Development and Differentiation, GRS BI 610	4
Computational Biology: Genomes, Networks, Evolution, ENG BE 562	4
Comprehensive Immunology, GMS MI 713	4
DNA and Protein Sequence Analysis, ENG BE 561	4
Elementary Biostatistics, GMS MS 700	2
Gene Regulation and Pharmacology, GMS PM 880	2
Genetics and Epidemiology of Human Disease, GMS MM 701	2
Human Genetics, GMS MS 781	4
Institutional Racism in Health and Science, ENG BF 510	4
Molecular Basis of Neurologic Diseases, GMS MS 783	2
Molecular Mechanisms of Growth and Development, GMS BI 787	2
Pharmacogenomics, GMS PM 832	2
Protein Structure and Function, GMS BI 783	2
Receptors and Signal Transduction, GMS BI 790	2
Systems Neuroscience, GMS AN 810	4
Techniques in Molecular Biology, GMS BI 777	2
Translational Bioinformatics Seminar, GMS BF 831	2
Spring:	
Cognitive Neuroscience, GMS AN 811	4
Critical Thinking in Biomedical Research, GMS FC 762	2
Gene Targeting in Transgenic Mice, GMS BI 776	2
Biochemical Mechanisms of Aging, GMS BI 786	2
Biological Core Technologies, GMS MM 730	2
Elementary Biostatistics, GMS MS 700	2
Foundations in Biomedical Sciences Vm: Molecular Metabolism	2
Foundations in Biomedical Sciences Vp: Physiology of Specialized Cells	2
Genetics of Microorganisms, GMS MI 714	4
Genomics Data Mining and Statistics, SPH BS 831	2
Growth Control and Cell Transformation, GMS MI 717	4
Introduction to R, SPH BS 720	2
Intermediate Statistical Analysis and Computing for Clinical Research, GMS CI 671	3
Mass Spectrometry and Functional Genomics, GMS BI 793	2
Molecules to Molecular Therapeutics, GMS MM 710	4
Neuroanatomical Basis of Neurologic Disorders, GMS AN 808	2

² Student interest in taking courses not listed above, for elective credit, will be evaluated on a case-by-case basis.

Systems Biology of Human Disease: Using AI to Advance Personalized Medicine, ENG BE 700	var
Teaching College Biology, GRS BI 699	2
Teaching Methods in the Biomedical Sciences, GMS AN 804	2
Technology Commercialization: From Lab to Market, MET AD 893	4